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State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

355 West North Temple
3 Triad Center, Suite 350
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January 24, 1992

CERTIFIED RETURN RECEIPT
P 074 978 834

Mr. Glenn M. Eurick
Environmental Affairs Coordinator
Barrick Resources (USA), Incorporated
Barrick Mercur Gold Mine
P. O. Box 838
Tooele, Utah 84074

Glen

Dear Mr. Eurick:

Re: Review of Conceptual Closure and Post-Closure Monitoring Plan, Dump Leach #3, Mercur Gold Mine, M/045/017, Tooele County, Utah

The Division has completed its review of your latest response, received October 28, 1991, which addresses technical deficiencies noted in Barrick's original closure/reclamation plan for Dump Leach Area #3. The Division supports the general context of the latest conceptualized plans, but requests further clarification in the following areas of concern:

R647-004-110 - Reclamation Plan

110.2 - Roads, highwalls, slopes, leach pads, impoundments, drainages, pits, trenches, ponds, drill holes, etc. will be reclaimed

1. The operator indicates that a 12 inch layer of Long Trail Shale is to be compacted by the placement of overlying components. This clay cap will be compacted on a 1.5:1 slope. The Division is concerned whether the shale/clay can be compacted adequately only through the placement of the overlying materials. How will the operator confirm that the clay has indeed obtained the desired depth, compaction and

permeability? What form of quality control and testing will be implemented?

Table I, Reclamation Cap Specification - A 2:1 sideslope configuration is indicated for the clay cap which conflicts with the 1.5:1 slope described on page 2 of the conceptual closure plan. Which slope configuration is correct?

Table I indicates that the bulk fill is to be compacted by end dumping and wheel rolling (assume end-dumped from top of slope?). Page 2 of the plan indicates bulk fill will be placed and compacted by proceeding from the slope bottom to the top, with no downslope dozing across the underlying clay. This seems somewhat confusing and contradictory? Are both of these statements correct? If not, which placement and compaction description is correct? - (HWS/AAG/DWH)

2. How will the operator assure slope surface stability on the reclaimed 2:1 heap slopes? No mention of stabilizing techniques, other than the proposed trenches/swales to be constructed on 200 foot centers, are referenced in the plan. The operator must describe, in the plan, alternative state-of-the-art slope stabilizing technique(s) to be used on the 2:1 slopes to insure short and long term slope stability. - (HWS)

110.5 - Revegetation planting program and topsoil redistribution

1. The operator has not adequately addressed question #2 from our previous (December 21, 1990) review regarding the location of the borrow areas from which material is to be taken for reclaiming the heap. Borrow area disturbed acreage and reclamation plans for the borrow areas have not been provided.

   Barrick's proposed volume of subsoil (213,000 CY) will cover approximately 44 acres to a depth of three feet. The top and side slopes of dump leach 3 equal approximately 65 acres. The specifications in this response call for subsoil to cover the heap side slopes and top. There is a subsoil deficit. Barrick's volume of topsoil will cover 49.6 acres to a depth of one foot. The specification in this response call for topsoil to cover the entire heap (65 acres). There is

a topsoil deficit. Please provide the appropriate information to address these concerns. - (HWS/AAG)

2. The operator has failed to address question #3 from the Division's December 21, 1990 technical review. Please provide the requested information regarding the topsoil material removed during construction of the Dump Leach #3/tailings impoundment haul road. - (HWS)

3. Page 3, Section 3.5 & 3.6, Subsoil/Topsoil - How will the 36 inch subsoil lift and the 12 inch topsoil lift be placed with "no compactive effort"? What equipment will be used? Will it be emplaced by pushing from bottom to top as described for the "bulk fill" layer or will it be end-dumped and dozed from the top of the heap?

R647-004-111 - Reclamation Practices

Included in Barrick's June 18, 1990 response was a commitment to fill in the two impoundment structures up drainage from Dump Leach 3 with waste rock, forming an adequate free draining system from upper Meadow Canyon and Dead Horse Canyon around Dump Leach 3. Barrick's September 24, 1990 technical response document also contained language on page 2, under "Conceptual Dump Leach No. 3 Dump Shaping", paragraph 3, that the two upgradient catch basins (Dead Horse Canyon and Meadow Canyon) will be filled with waste material to a level consistent with the two drainage systems passing around the dump leach site on the west and east sides (copies attached).

Page 59, Section 7 - Drainage Control Structures, of the revised plan does not include these provisions. The latest conceptual closure plan (text and maps) must be modified according to the previously "approved" design commitments.

On page 59, Section 8 - Roads, the plan indicates that haul roads and access roads scheduled for reclamation will be *scarified* prior to topsoiling and revegetating. The Division will require *ripping* to a minimum depth of 12-18 inches to loosen compacted road surfaces prior to topsoil placement. The revised plan should be modified to include this requirement.

On Drawing No. 9-91-4, Barrick has provided an expanded cross-sectional design detail of the rock-lined diversion ditch and anchor trench (east side). The Division requests a similar expanded cross sectional design detail of the diversion ditch/access road proposed for the west side of the dump leach upon closure. This drawing presently infers that this diversion access road will be approximately 65 feet wide upon reclamation. Please confirm if this is the intended design width for this structure. This width seems excessive.

The Division requests that supplemental text be provided on page 59 of the revised reclamation plan, describing how surface runoff will be routed along the western edge of the dump leach facility. The present description only addresses drainage control along the eastern edge of this facility. If it is Barrick's intention to append the Dump Leach 3 Closure & Monitoring Plan as a separate section to the overall reclamation plan, then this change may not be necessary.

Page 4, Section 5.5 - Annual Ground Water quality monitoring may not be frequent enough. What is the post-closure monitoring time frame? A three year period is inferred. Is this period meant to apply to post-closure ground water monitoring or revegetation success? This Division will defer to the State Division of Water Quality for establishment of the ground water monitoring frequency upon closure of this facility.

GENERAL COMMENTS:

1. Barrick has provided the Division with updated and revised replacement pages allowing direct insertion into the approved mining and reclamation plan. We appreciate Barrick's efforts in this regard. However, we would suggest for future ease of review, that the operator please highlight or redline those sections of the revised text so that it is clear what changes are being made to the approved plan.

2. Page 4, Section 5.2 - Who will assume long-term maintenance responsibility for the Meadow Canyon access road and the drainage diversions? Will this maintenance commitment continue after reclamation surety release?

3. Is Drawing 9-91-3, entitled - *Proposed Closure & Reclamation Plan Dump Leach Area No. 3*, intended to reflect the post-reclamation contours? Does

Drawing 6-89-5, entitled - *Proposed Final Configuration-Reservation Canyon Tails & Dump Leach No. 3*, reflect pre-reclamation contours? We assume from Drawing 9-91-3, that the access road to DL-3 survey control point 1, and the access road between the leach plant site and the tailings impoundment will be reclaimed. Please advise if this is not the case.

4. <u>R647-004-106.2 - Operation Plan</u>

As part of Barrick's June 18, 1990 technical deficiency response a commitment was made to perform a series of acid-base potential analyses on the material being mined from the Sacramento Hill Pit to be placed on the Sunrise Dump. Barrick requested 90-days to prepare and analyze the samples and produce results of the acid forming potential. Any selective material handling was to be addressed, if necessary, following the results of the testing. The Division accepted the 90-day time period as part of our July 12, 1990 review letter. A recent review of the Division's files has failed to locate the analytical results, or a response to the selective materials handling question. **This information is long overdue. The Division requests that this information be provided no later than February 7, 1992.**

We appreciate Barrick's continued cooperation in working with us in resolving our permitting concerns. If possible, please provide a response to these remaining concerns by March 9, 1992. Please contact me, or Wayne Hedberg if you have questions regarding the content of this review document.

Sincerely,

Lowell P. Braxton
Associate Director, Mining

jb
Attachments
cc: Larry Mize, DWQ
Wayne Hedberg, DOGM
M045017.1

BARRICK MERCUR GOLD MINE

June 18, 1990

Mr. Lowell P. Braxton
Associate Director, Mining
Division of Oil, Gas & Mining
Utah Department of Natural Resources
Suite 350
3 Triad Center
355 West North Temple
Salt Lake City, Utah 84180-1203

Dear Mr. Braxton:

Subject: M/045/017-88(1), Tooele County, Utah

Please accept this correspondence as Barrick's response to your letter dated May 21, 1990 requesting clarification of certain outstanding issues. Each line item has been addressed and supported with supplemental information as required.

Please note that the wildlife impact mitigation plan will also be transmitted to the Division of Wildlife Resources for their files. We trust that, with this submittal, all outstanding conditional issues will be resolved and formal approval of the M&RP can be granted upon expiration of the public notice comment period on June 24, 1990.

Barrick continues to welcome the Division's longstanding cooperation in resolving these permitting issues and looks forward to a successful implementation period.

Respectfully,

Glenn M. Eurick
Environmental Affairs Coordinator (USA)

GME/cg

cc: F. D. Wicks
C. L. Landa
E. E. Maurer
T. B. Faddies
M. P. Richardson
R. R. Sacrison
D. P. Beatty
H. Hedrick (BLM)
J. Urbanik (Tooele County)
B. Buck (JBR Consultants

P.O. Box 838, Tooele, Utah 84074 Telephone (801) 268-4447

R 613-004-106.2 - Operation Plan

Barrick will perform a series of acid-base potential analyses on the material being mined from the Sacramento Hill Pit, to be placed on the Sunrise Dump. The initial analyses will be performed on the existing pulp samples obtained during development drilling of the area. These samples will be analyzed for calcium (calculated for calcium carbonate $CaCO_3$) and sulfur (calculated for sulfide) using the methods shown in attachment No. 1, Barrick Mercur Laboratory analysis procedures. The results of these analyses will be used to determine acid forming potential of the sulfide in the presence of calcium carbonate (acid neutralization potential). The initial sampling plan, geologic origin and stratigraphic occurrence of the samples are shown in attachment No. 2 (memo to D.P. Beatty from L.W. Stanger).

Barrick is requesting an additional 90 days to prepare and analyze the samples and produce results of the acid forming potential. Any selective material handling will be addressed, if necessary, following the results of testing.

R 613-004-107.5 - Soils

As suggested by the Division, a rip-rapped earthen berm will be constructed in place of silt fence 6, north of topsoil stockpile T15, and will be used to divert runoff water to the west side of stockpile T15 into the drainage channel described in previous correspondence. This work will be completed by the end of July 1990.

Topsoil stockpiles T9 and T12 have been replaced on map 2.4-2, post reclamation configuration, along with the intended location of stockpile T18. As indicated in previous text, T12 will be relocated to T13 location and T9 will be relocated to T18 proposed location. The updated version of this map is included as attachment No. 3.

All topsoil stockpile volumes and stockpile changes from 1986 through May 1990 are shown in attachment No. 4, topsoil stockpile activity table. As indicated in the table, 916,575 cubic yards of topsoil have been stockpiled as of May 31, 1990.

The discrepancies shown in total topsoil volume required at final reclamation between page 51b of the plan (1,091,194 cu. yds.) and page 60, table 2.4-3 (1,495,551 cu. yds.) is simply a mathematical error on table 2.4-3 (page 60) which inadvertently included the subsoil and clay volumes in the "total topsoil required" volume. In addition, the requirements to reclaim 31.3 acres of roads were left off of table 2.4-3 (page 60). The correct figures are those presented on page 51b of the plan equalling 1,091,194 cubic yards of topsoil as the reclamation requirement.

As shown in attachment No. 4, Topsoil Stockpile Activity Table, the current stockpiled inventory (May 1990) equals 916,575 cubic yards,

which is a deficit of 174,619 cubic yards in reclamation requirement. This deficit will be decreased with additional topsoil salvage in the following locations:

1991-92	Tailing Dam Construction	(20,000 cu. yds., est.)
1990	North Marion Hill Pit Stripping	(20,000 cu. yds., est.)
1990	Sacramento Pit Stripping	(15,000 cu. yds., est.)

This leaves a net topsoil deficit of approximately 119,619 cubic yards, if no additional topsoil is salvaged. Prior to final reclamation, the deficit will be resolved using the best available subsoil and changes in revegetation techniques, such as alternate plant species and modified fertilizer blends to compensate for the lower grade soils.

R 613-004-109 - Impact Assessment

The Wildlife Impact Mitigation plan has been revised pursuant to site and regulatory modifications and is incorporated into the existing MRP at page 62.

R 613-004-110 - Reclamation Plan

The design details for the conceptual closure and post-closure monitoring plan for Dump Leach Area 3 will be negotiated among Barrick, the Division, and the Bureau of Water Pollution Control as a result of overlapping regulatory control. Pursuant to our groundwater discharge permit, this deadline will be on or about September 9, 1990.

In response to the two specific concerns by the division in the Tentative Approval notice, conceptually Barrick will line the 10 foot wide diversion channels to minimize erosional impacts, and fill in the two impoundment structures up drainage from Dump Leach 3 with waste rock, forming an adequate free draining system from upper Meadow Canyon and Dead Horse Canyon around Dump Leach 3.

R 613-004-111 - Reclamation Practices

The reclamation requirements for the tailing pond at final mine closure is unknown at this time, however, Barrick is committed to continue researching viable options for reclamation of the tailing facility until such time as a suitable plan is realized. Barrick will submit a detailed tailing pond reclamation plan to the division for approval at least 12 months prior to ultimate mine closure.

R 613-004-113 - Surety

Barrick awaits the division's analysis of our reclamation cost estimate and self-bonding qualification calculations.

Wayne - route & file
M/045/017-88(

BARRICK

BARRICK RESOURCES (USA), INC.

September 24, 1990

Mr. Lowell Braxton
Associate Director, Mining
Division of Oil, Gas & Mining
Utah Department of Natural Resources
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Dear Mr. Braxton:

Subject: M/045/017-88(1)

Please find attached for your review and acceptance the following documents:

- Conceptual Closure Plan and Post-Closure Monitoring Plan for Dump Leach Area No. 3. Submitted pursuant to your letter dated July 12, 1990.

- Contingency Plan for Dump Leach Area No. 3.

These documents have also been submitted to the Bureau of Water Pollution Control for approval and incorporation into the Groundwater Quality Discharge Permit No. UGW450001 for the Dump Leach Area No. 3 operation.

Please do not hesitate to call should you have any questions concerning these documents or the facility in general.

Thank you for your continued support and cooperation.

Respectfully,

Glenn M. Eurick
Environmental Affairs Coordinator (USA)

GME/cg
Attachment
cc: F. D. Wicks
C. L. Landa
E. E. Maurer
T. B. Faddies
M. P. Richardson
R. R. Sacrison
D. P. Beatty
D. Ostler (BWPC)
J. Urbanik (Tooele County)
S. Brooks (BLM)
T. Vandell (Dames & Moore)
B. Buck (JBR Consultants)
D. Bird (Parsons, Behle & Latimer)

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Conceptual Dump Leach No. 3 Dump Shaping

Following the removal of the solution distribution piping, the dump will be shaped and leveled to a configuration and bearing capacity sufficient to support a final cover. During the shaping procedure, any space existing between the spent leached material and the outermost perimeter of the liner will be filled to within three to four feet of that perimeter. This will allow the final cover to extend to or beyond the liner at all locations.

The final configuration will most likely consist of ±4 acres of level area at the top, with slopes descending in all directions at 180 feet or less and at a gradient of 1.5h:1v.

The two upgradient catch basins (Dead Horse Canyon and Meadow Canyon) will be filled with waste material to a level consistent with the two drainage systems passing around the dump leach site on the west and east sides. The tops of these filled areas will be capped with subsoil and topsoil and the drainages routed to tie into the above-mentioned channels. Both inlets to the dump leach subdrain system will be plugged prior to covering with the referenced fill material.

Conceptual Final Cover Placement

The final cover will consist of three distinct zones: (1) a low permeability/infiltration-resistant cap placed directly over the spent leached material, (2) a nominal three-foot-thick layer of subsoil, and (3) a nominal one-foot-thick layer of topsoil. As the cap placement progresses around the south side of the dump leach, the pumping system and top cistern section will be removed and capped over.

This cover has been designed to prevent seepage through the final cover into the dump interior. A determination of the percolation potential has been calculated by JBR Consultants Group for this final cover and is attached as Appendix 1. The result of the calculations is that water will not be available for seepage through the base of the cover cap given an above average precipitation year.

Conceptual Erosion Control and Final Reclamation Program

The final topsoil cover will be graded in a manner to prevent standing water from remaining on top. Additionally, small berms will be utilized to direct any precipitation water to drop points over and down the sides of the covered dump. The drop points will be lightly depressed and lined with a long-term degradable liner